

What is claimed is:

1. A dental diagnostic and treatment apparatus comprising:

5 an instrument having a forward end equipped with or capable of being equipped with a diagnostic/treatment tool for diagnosing or treating a lesion in an oral cavity; and

10 light radiating unit having a light source disposed at or near said forward end, wherein excitation light for exciting light for distinctively detecting said lesion is radiated from said light source toward said lesion.

15 2. A dental diagnostic and treatment apparatus as claimed in claim 1, wherein wavelength of said excitation light is selected from within a near ultraviolet region of  $405\pm 50$  nm, a blue region of  $470\pm 30$  nm, a red region of  $700\pm 100$  nm, an infrared region, or a near infrared region.

20 3. A dental diagnostic and treatment apparatus as claimed in claim 1, wherein said light radiating unit includes a light source for emitting said excitation light and a light source for emitting illumination light into said oral cavity.

25 4. A dental diagnostic and treatment apparatus as claimed in claim 3, wherein said light radiating unit is capable of simultaneously radiating said excitation light and said illumination light.

30 5. A dental diagnostic and treatment apparatus as claimed in claim 3, wherein said light radiating unit is capable of selectively or simultaneously radiating said excitation light and said illumination light.

6. A dental diagnostic and treatment apparatus as claimed in claim 3, wherein said illumination light is white light.

35 7. A dental diagnostic and treatment apparatus as claimed in claim 1, wherein said light source that said light radiating unit has includes a light-emitting device

constructed from a light-emitting diode or a semiconductor laser diode.

5       8.     A dental diagnostic and treatment apparatus as claimed in claim 7, wherein said light source that said light radiating unit has includes a light-emitting device for emitting white light.

10       9.     A dental diagnostic and treatment apparatus as claimed in claim 8, wherein said light radiating unit includes a light source for emitting said excitation light and a light source for emitting illumination light into said oral cavity, and is capable of simultaneously radiating said excitation light and said illumination light.

15       10.    A dental diagnostic and treatment apparatus as claimed in claim 7 or 8, wherein said light radiating unit variably adjusts a light emission level of said light source.

20       11.    A dental diagnostic and treatment apparatus as claimed in claim 7, wherein said light radiating unit includes a plurality of light sources for emitting light in different wavelength regions, and is capable of radiating light in one wavelength region by switching between said plurality of light sources or is capable of variably adjusting a light emission level of at least one of said light sources.

30       12.    A dental diagnostic and treatment apparatus as claimed in claim 11, wherein said light radiating unit includes an excitation light source for emitting said excitation light and a white light source for emitting white light, and is capable of radiating either said excitation light or said white light by switching between said excitation light source and said white light source or variably adjusts a light emission level of at least one or the other of said light sources.

35       13.    A dental diagnostic and treatment apparatus as claimed in claim 11, wherein said light radiating unit includes a plurality of light sources for emitting

excitation light in different wavelength regions, and is capable of radiating excitation light in one wavelength region by switching between said plurality of light sources or is capable of variably adjusting an excitation light emission level of at least one of said light sources.

14. A dental diagnostic and treatment apparatus as claimed in claim 11, wherein said light radiating unit includes excitation light sources for emitting excitation light in different wavelength regions and a white light source for emitting white light, and is capable of radiating said excitation light and said white light by switching between said plurality of excitation light sources and said white light source or variably adjusts a light emission level of at least one light source selected from among said plurality of excitation light sources and said white light source.

15. A dental diagnostic and treatment apparatus as claimed in claim 1, wherein said light source of said light radiating unit includes a light-emitting device selected from among a halogen lamp, a xenon lamp, a sodium lamp, a metal halide lamp, a mercury lamp, and a blacklight lamp.

16. A dental diagnostic and treatment apparatus as claimed in claim 15, wherein said light radiating unit includes an optical filter for selecting light of a designated wavelength from the light emitted from said light source.

17. A dental diagnostic and treatment apparatus as claimed in claim 16, wherein the light of said designated wavelength is selected by replacing another filter with said filter having a different characteristic.

18. A dental diagnostic and treatment apparatus as claimed in claim 15, wherein said light radiating unit variably adjusts a light emission level of said light source.

19. A dental diagnostic and treatment apparatus as

5 claimed in claim 1, wherein said light radiating unit includes a plurality of light sources for emitting light at different wavelengths, and selects the light to be emitted by sequentially switching between said plurality of light sources, thereby sequentially radiating said light at said different wavelengths in a time-division fashion.

10 20. A dental diagnostic and treatment apparatus as claimed in claim 1, wherein said light radiating unit includes, in addition to said light source, a radiating part from which said excitation light emitted from said light source is radiated toward said lesion, and wherein said radiating part is disposed in said  
15 diagnostic/treatment tool or near a mounting portion of said diagnostic/treatment tool.

21. A dental diagnostic and treatment apparatus as claimed in claim 20, wherein said excitation light is radiated from an area surrounding said  
diagnostic/treatment tool toward said lesion.

20 22. A dental diagnostic and treatment apparatus as claimed in claim 1, wherein said light source that said light radiating means has is mounted on a detachable member formed so as to be detachable from said forward end, and

25 said detachable member includes a connecting member which is capable of detachably engaging with said forward end and which, when placed into engagement with said forward end, supplies power to said light source.

30 23. A dental diagnostic and treatment apparatus as claimed in claim 1, wherein said diagnostic/treatment tool which radiates treatment laser light is attached to said forward end, and

35 said light source of said light radiating unit is disposed on said forward end.

24. A dental diagnostic and treatment apparatus as claimed in claim 23, wherein said light radiating unit

radiates said excitation light and said treatment laser light onto said lesion in a time-division fashion.

5        25. A dental diagnostic and treatment apparatus as claimed in claim 1, wherein a radiating part, from which said excitation light emitted from said light source that said light radiating unit has is radiated toward said lesion, or said light source that said light radiating unit has is provided in an adapter having a mounting member capable of being detachably mounted on the forward  
10       end of said instrument.

      26. A dental diagnostic and treatment apparatus as claimed in claim 25, wherein said light source includes a plurality of light-emitting devices, and wherein  
15       said plurality of light-emitting devices are arranged side by side in an end face portion of said adapter.

      27. A dental diagnostic and treatment apparatus as claimed in claim 25, wherein said adapter has a ring-shaped structure which is detachably fitted onto the  
20       forward end of said instrument.

      28. A dental diagnostic and treatment apparatus as claimed in claim 25, wherein said adapter is equipped with an operating part for operating said light source.

25       29. A dental diagnostic and treatment apparatus as claimed in claim 28, wherein said adapter is equipped with a power supply for driving said light source.

      30. A dental diagnostic and treatment apparatus as claimed in claim 29, wherein said power supply is a primary cell or a secondary cell.

30       31. A dental diagnostic and treatment apparatus as claimed in claim 25, wherein a power supply for driving said light source is provided separately from said adapter.

35       32. A dental diagnostic and treatment apparatus as claimed in claim 31, wherein said power supply is detachably mounted on a body of said instrument.

      33. A dental diagnostic and treatment apparatus as

claimed in claim 25, wherein an operating part for operating said light source is detachably mounted on a body of said instrument.

5        34. A dental diagnostic and treatment apparatus as claimed in claim 25, wherein said mounting member elastically holds said adapter on the forward end of said instrument.

10       35. A dental diagnostic and treatment apparatus as claimed in claim 25, wherein said adapter is equipped with a filter plate having a plane surface perpendicular to an axis direction of a body of said instrument, said plane surface spreading so as to encircle said body.

15       36. A dental diagnostic and treatment apparatus as claimed in claim 25, wherein when said instrument is equipped with an illuminating unit for illuminating said oral cavity, said adapter is mounted at a position that interrupts illumination light emitted from said illuminating unit.

20       37. A dental diagnostic and treatment apparatus as claimed in claim 1, wherein said instrument is a laser handpiece capable of radiating treatment laser light into said oral cavity together with guide light that serves as a guide in locating an area being illuminated with said treatment laser light, and wherein  
25                said excitation light is contained in said guide light.

30       38. A dental diagnostic and treatment apparatus as claimed in claim 7 or 15, wherein said light source includes said light-emitting device mounted near a mounting portion of said diagnostic/treatment tool.

35       39. A dental diagnostic and treatment apparatus as claimed in claim 38, wherein said light-emitting device is mounted in such a manner as to encircle said diagnostic/treatment tool.

40. A dental diagnostic and treatment apparatus as claimed in claim 38, wherein said light-emitting device is accommodated in a position near the mounting portion



of said diagnostic/treatment tool.

41. A dental diagnostic and treatment apparatus as  
claimed in claim 1, wherein said light radiating unit  
includes a plurality of light sources for emitting light  
at different wavelengths, and

an operating part capable of switching  
selection between said plurality of light sources or  
capable of variably adjusting a light emission level of  
at least one of said light sources is mounted on said  
instrument.